

Applicant: Becker et al.
Application No.: 10/519,589

IN THE DRAWINGS

Please replace sheet 2/3 of the drawings with the attached Replacement Sheet 2/3. In the Replacement Sheet, Figure 4 has been amended to identify the gap with element number 14.

REMARKS

Claims 1-5 are currently pending in this application, as amended. By the present amendment, claims 1 and 3 have been amended and claim 6 has been canceled. Additionally, Figure 4 of the drawings has been amended, as noted above. Applicants respectfully submit that no new matter has been introduced into the application by these amendments.

DRAWINGS

In the Action, the drawings were objected to as failing to include reference sign "14." In response, Figure 4 of the drawings has been amended to add the element number 14 to identify the gaps. Accordingly, withdrawal of the objection to the drawings is respectfully requested.

CLAIM REJECTIONS – 35 U.S.C. §112

Claim 3 was rejected under 35 U.S.C. §112, second paragraph, as being indefinite. In response, applicants have amended claim 3 in order to provide proper antecedents for the "valve abutment surface." Accordingly, withdrawal of the Section 112 rejection is respectfully requested.

CLAIM REJECTIONS – 35 U.S.C. §103(a)

Claims 1-2 and 4-6 were rejected under 35 U.S.C. §103(a) as unpatentable over the combination of U.S. 4,196,746 to Broyan and U.S. 5,025,829 to Edwards et al. Applicants respectfully traverse this rejection.

As amended, claim 1 is amended to a pump comprising at least one shield valve controlled by a conveyed medium and which has a valve disk of flexible material which is clamped in a central region and is moveable between an open position and a closed position. In the closed position, the valve closes at least one

valve opening. Extensions project from the valve disk in step form for at least one of preventing a sudden, flat abutment of the valve disk on a valve abutment surface or for limiting a valve opening motion. Gaps are located between the extensions and the valve disk and define through flow openings of the valve. The valve disk is connected by the step-shaped extensions to a sealing ring surrounding the valve disk and clamped between two housing portions.

Broyan is directed to a gas compressor valve which utilizes a disk having a plurality of openings defined therein that is allowed to move up and down in order to either block or allow flow of material through a plurality of openings. As shown in Figure 5, the openings defined through the valve disk (10) are offset from the openings (a) in the seat (1). The valve plate (3) is moveable up and down along a center guide bolt (7) and a clearance hole is provided in the valve plate. The valve plate is spring biased toward the valve seat (1) via separate springs (14) or integrally formed leaf springs, as shown in Figure 5. Broyan fails to provide a valve disk clamped in its central region since the entire disk is moved up and down against the spring bias toward the valve seat (1). See column 2, lines 26-28. Accordingly, in contrast to the present invention, the valve disk of Broyan is not clamped in a central region. Additionally, the through flow provided in the valve disk (3) of Broyan is via a plurality of openings in the interior portion of the disk. Thus, contrary to the present invention, there is no requirement for gaps located between the extensions and the valve disk that define the through flow openings of the valve. Finally, Broyan fails to disclose a sealing ring connected to the valve disk via the step-shaped extensions, with the sealing rings surrounding the valve disk and being clamped between two housing portions.

Edwards et al. is cited in the Action as remedying the deficiencies of Broyan. However, Edwards et al. merely teach a check valve formed from a flexible valve disk (10) having three windows defined therein. The outer edge (14) forms a sealing ring that is clamped between two housing pieces and the entire central portion of

the sealing disk (10) forms the seal against the valve seat (28) shown in Figure 3. Based on the arrangement of Edwards et al., the Edwards valve disk cannot be clamped in a central region or the device would be rendered non-functional. Thus, this feature is absent from both Edwards et al. and Broyan. Further, while Edwards et al. provides windows located between radially extending spokes (20) there is no suggestion or disclosure of gaps being located between the extensions and the valve disk that define the through flow openings of the valve. The windows of Edwards et al., which clearly define the through flow openings in the open position of the valve, are not located between the extensions and the valve disk, but rather are located between the sealing ring and the valve disk. Thus, the arrangement does not function in the same manner as the present invention based on these structural differences and the requirement against the central region of the Edwards et al. valve disk being clamped. Accordingly, as these features are wholly absent from Broyan and Edwards et al., the combination of these references cannot render the present invention obvious. Therefore, withdrawal of the Section 103 rejection of claim 1 is respectfully requested.

Claims 2, 4 and 5, depend from claim 1 and should be similarly patentable over this combination for the reasons noted above in connection with claim 1.

In the Action, claim 3 was rejected under 35 U.S.C. §103 as unpatentable over the combination of Broyan, Edwards et al. and U.S. 5,275,541 to Becker et al. Applicants respectfully traverse this rejection.

Claim 5 depends from claim 1 and is similarly patentable over the combination of Broyan and Edwards et al. for the reasons noted above in claim 1. Becker et al. fails to remedy the deficiencies of Broyan and Edwards et al. Becker et al. is in fact the very type of prior art pump over which the present invention is an improvement. There is no suggestion or disclosure in Becker et al. of the present shield valve arrangement which prevents the noise associated with the slapping of

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the valve disk over the whole disk periphery. Accordingly, withdrawal of the Section 103 rejection of claim 3 is respectfully requested.

CONCLUSION

If the Examiner believes that any additional minor formal matters need to be addressed in order to place the present application in condition for allowance, the Examiner is invited to contact the undersigned by telephone at the Examiner's convenience.

In view of the foregoing amendments and remarks, applicants respectfully submit that the present application, including claims 1-5, is in condition for allowance, and a Notice to that effect is respectfully requested.

Respectfully submitted,

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